

REMARKS

In response to the Office Action mailed February 28, 2008, Applicant respectfully requests reconsideration. To further the prosecution of this application, each of the rejections set forth in the Office Action has been carefully considered and is addressed below. The claims as presented are believed to be in condition for allowance.

Claims 1, 3 and 5-11 were previously pending in this application. No claims are amended, added or canceled. As a result, claims 1, 3 and 5-11 remain pending for examination, with claims 1 and 11 being independent. No new matter has been added.

Claim Rejections Under 35 U.S.C. § 103

Claims 1, 3 and 5-11 are rejected under 35 U.S.C. § 103(a) as purportedly being obvious over “Dye-Sensitized Solar Cells Using Semiconductor Thin Film Composed Of Titania Nanotubes,” by Adachi, et al. (“Adachi”) in view of U.S. Patent No. 5,350,644 to Graetzel, et al. (“Graetzel”), U.S. Patent No. 6,376,765 to Wariishi, et al., (“Wariishi”) and U.S. Patent No. 6,586,670 to Yoshikawa (“Yoshikawa”). Applicant respectfully traverses this rejection, as independent claims 1 and 11 patentably distinguish over any combination of the cited references.

Each of independent claims 1 and 11 includes limitations directed to a sensitizing dye, retained by titania nanotubes, which has no acidic substituents, wherein particles of the sensitizing dye do not associate with each other and no suppression of dye association is performed.

The Office Action relies on Graetzel to satisfy the claim limitations directed to a sensitizing dye having no acidic substituents. In particular, the Office Action contends that Examples 7 and 8, listed in Table 1 of Graetzel (i.e., at col. 9, lines 1-13) are sensitizing dyes for a photoelectric transfer device which have no acidic substituents. This contention is unsupported by the reference.

Graetzel discloses that Examples 3-8 (i.e., all of those listed in Table 1, including Examples 7 and 8) are all prepared according to the method disclosed for preparing Example 1 (col. 8, lines 66-68). The method for preparing Example 1 is disclosed in a passage at col. 7, line 64 – col. 8, line 57. In this passage, Graetzel discloses that the solutions in Table 1 are prepared using a method

which includes lowering the pH of the solution to 3.2 (col. 8, lines 51-52). Given that the pH of the solution of Examples 7 and 8 is lowered to 3.2 (i.e., an acidic pH), these Examples (and all of the others listed in Table 1) necessarily include acidic substituents. Thus, Graetzel does not disclose or suggest a sensitizing dye having no acidic substituents, as the Office Action contends.

The Office Action also contends that Wariishi teaches dyes which do not contain acidic substituents. In particular, the Office Action contends that dyes S-1, S-3 to S-20, S-22, S-23, S-27 to S-29, S-33, S-37 and S-41 disclosed by Wariishi do not include acidic substituents. This contention is unsupported by the reference, and even if it were supported, Wariishi discloses suppressing an association of dye particles. As a result, Wariishi fails to disclose or suggest a sensitizing dye which has no acidic substituents, wherein particles of the sensitizing dye do not associate with each other and *no suppression of dye association is performed*, as required by independent claims 1 and 11.

Wariishi discloses a general formula (V) for a sensitizing dye at col. 35, lines 30-38. Wariishi discloses that components R₉₁, R₉₂, Y₅₁ and Y₅₂ of formula (V) have an acidic group with a dissociative proton such as a carboxylic acid group, a phosphonic acid group, a sulfonic acid group, a boric acid group, etc. (col. 36, lines 39-43).

In addition, Wariishi discloses a suppression of an interaction between particles of the sensitizing dye using a compound that includes a carboxyl group such as chenodeoxycholic acid (col. 54, lines 54-60). Thus, not only does Wariishi not disclose or suggest a sensitizing dye having no acidic substituents, but Wariishi also discloses suppressing an association of particles of the sensitizing dye (using a compound which includes acidic substituents). Thus, Wariishi also fails to satisfy the limitations of claims 1 and 11 directed to a sensitizing dye which has no acidic substituents, wherein particles of the sensitizing dye do not associate with each other and *no suppression of dye association is performed*.

The Office Action further contends that Yoshikawa discloses a sensitizing dye for use in a dye-sensitized photoelectric transfer device, and cites example M-1 of Yoshikawa (i.e., at col. 24) as an example of a dye which does not include an acidic groups. However, like Wariishi, Yoshikawa discloses suppressing an association of dye particles (col. 13, lines 42-46) and, like Wariishi,

performs this suppression using compounds having acidic substituents, like a carboxyl group such as chenodeoxycholic acid or cholic acid (col. 13, lines 46-49). Thus, Yoshikawa also fails to satisfy the limitations of claims 1 and 11 directed to a sensitizing dye which has no acidic substituents, wherein particles of the sensitizing dye do not associate with each other and *no suppression of dye association is performed.*

In view of the foregoing, the prior art of record fails to satisfy all of the limitations recited by independent claims 1 and 11. Accordingly, the rejection of claims 1 and 11, and of the claims that depend respectively therefrom, under 35 U.S.C. § 103(a) as purportedly being obvious over Adachi in view of Graetzel, Wariishi and Yoshikawa should be withdrawn.

CONCLUSION

A Notice of Allowance is respectfully requested. The Examiner is requested to call the undersigned at the telephone number listed below if this communication does not place the case in condition for allowance.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Dated: May 28, 2008

Respectfully submitted,

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